

NUTRITION

STRATEGY OVERVIEW

OUR MISSION

Guided by the belief that all lives have equal value, the Bill & Melinda Gates Foundation works to help all people lead healthy, productive lives. Our Global Health Program supports this mission by helping ensure that life-saving advances reach those who need them most.

We focus on problems that have a major impact on poor people in the developing world but get too little attention and funding. Where proven tools exist, we support sustainable ways to improve their delivery. Where they don't, we invest in research and development of new interventions such as vaccines, drugs, and diagnostics.

Our financial resources, while significant, represent a very small fraction of the overall funding needed to improve global health on a large scale. We therefore advocate for the policies and resources needed to provide people with greater access to health solutions. Strong partnerships are also essential to our success in making a difference and saving lives.

THE OPPORTUNITY

In developing countries, undernutrition leads to increased risk of mortality due to infections such as diarrhea and pneumonia and is the underlying cause of one-third of all deaths in children under 5 years of age. Among surviving children, approximately one-third suffer from stunting, which is associated with poor school performance and subsequent low economic productivity.¹ Undernourished women are at a greater risk of dying from pregnancy complications compared to well-nourished women and have a higher risk of delivering low birth weight babies. Their children are at higher risk later in life of physical and cognitive impairments and nutrition-related chronic diseases.² Data indicate that the overwhelming majority of people who are undernourished live in South Asia and sub-Saharan Africa, where 10 countries account for two-thirds of all stunted children worldwide.¹

A set of key proven interventions exist, that if implemented at sufficient scale, could reduce the burden of undernutrition and associated maternal and child death and disability by one-quarter.³ These interventions include promotion of optimal breastfeeding practices; age-appropriate complementary feeding that is adequate in quantity and quality from 6-24 months; and interventions to ensure sufficient intakes of key vitamins and minerals such as vitamin A, zinc, iron, folic acid, and iodine in the diet. Some of these have been successfully implemented, with the global coverage of vitamin A supplementation rising from 16 to 79 percent between 1999 and 2009,⁴ and the global coverage of iodized salt reaching 71 percent in 2009.⁵

Undernutrition is caused by a diet lacking in sufficient nutrients and/or common infectious diseases such as diarrhea.

Indicators of undernutrition: **Stunting** refers to short stature (or low height for age) and is an indicator of long-term or cumulative nutritional status.

Wasting refers to acute weight loss (or low weight for height) and is an indicator of short-term nutritional status.

Low birth weight refers to a birth weight of less than 2,500 grams. This may be due to prematurity, growth restriction, or a combination of the two.

Micronutrient deficiencies refer to inadequate intake and/or absorption of vitamins and minerals that are essential for healthy growth and survival. Globally, the most critical deficiencies that we have data for are in vitamin A, iron, iodine, zinc, and folic acid, due to their importance in the immune system, organ development, and growth. Micronutrient deficiencies are measured by a variety of indicators, including biomarkers and clinical signs.

Though these interventions offer great potential to prevent significant loss of life and illness, there are a number of challenges that hinder their scale-up. One challenge is a lack of practical knowledge on how best to change nutrition-related behaviors. For example, factors that contribute to changing women's breastfeeding behaviors are poorly documented. Another challenge is a lack of tools to measure the impact of existing interventions on a person's nutritional status. Lastly, decision makers often lack awareness on the nature, magnitude, and consequences of undernutrition, which has led to low and poorly allocated funding and weak policies. Additionally, for those aspects of nutrition that lack proven interventions, critical science and knowledge gaps hinder the development of new interventions and approaches.

Research indicates that it is critical to address the nutritional needs of mothers during pregnancy and lactation and children from birth to 2 years of age. If children do not receive adequate nutrition by their second birthday, they could suffer permanent disability, irreversible physical and cognitive damage, and lowered disease resistance. The consequences of poor nutrition continue into adulthood and are passed on to the next generation when undernourished girls and women have their own children.³

OUR STRATEGY

Our vision is for all children to have the nutrition they need for a healthy start to life.

Our strategy focuses on the research, development, and evaluation of improved and new products and tools to ensure that pregnant women receive all the nutrients they need; mothers breastfeed successfully, and their infants receive the nutrients they need for healthy growth and development. We are particularly focused on research and development (R&D) to discover new approaches for reducing undernutrition during pregnancy to when a child reaches 2 years of age because this is when proven nutrition interventions offer children the best chance to survive and reach optimal growth and development. While we rely on our partners to support the delivery of proven nutrition interventions in countries, we are focused on testing and evaluating nutrition intervention models to learn how to scale and replicate these affordably, giving priority to areas in sub-Saharan Africa and South Asia where the burden of undernutrition is greatest. Complementing these efforts is our focus on gathering and disseminating evidence to stakeholders on how best to scale-up proven interventions and advocating for ongoing funding and supportive policies in nutrition.

Research and Develop Interventions to Promote Healthy Pregnancies and Early Childhood Growth

There are a number of knowledge gaps that limit the development of effective nutritional interventions for mothers and their infants. Unanswered questions include: What are the nutrients required to promote healthy pregnancies and growth of children during pregnancy to 2 years of age? To what extent are these nutrients deficient in diets around the world? How does the gut environment and health affect nutrient assimilation and use, particularly in environments where exposure to infectious pathogens is great? What are the most effective strategies for promoting healthy growth in early childhood?

We are supporting R&D in collaboration with our Discovery, Enteric & Diarrheal Diseases, Maternal, Newborn, & Child Health, Water, Sanitation & Hygiene programs to answer these questions and translate findings and insights into products and interventions whose impact can be tested at scale. Our investments include efforts to:

- develop global standards to assess healthy fetal and postnatal growth
- understand the interplay between maternal nutrition and fetal growth and development, and the impact these have on birth outcomes and child health, physical growth, and development
- develop and test the efficacy of new, low-cost products and interventions to promote healthy growth from pregnancy through 2 years of age
- establish the effectiveness and scalability of promising products and interventions, including multi-sectoral approaches for achieving healthy growth

Our partners have already made some progress in this area. The global community now has better tools to measure healthy growth based on the World Health Organization's Child Growth Standards, which indicate how all infants and young children should grow, when given an optimum start in life, regardless of where in the world they are born. For the first time, children born in different regions of the world will have their growth and development assessed against a common standard.⁶

Develop and Test Interventions to Increase Optimal Breastfeeding

Breastfeeding, when practiced optimally, is one of the most effective child survival interventions available today. "Optimal breastfeeding" refers to the initiation of breastfeeding within 1 hour of birth; exclusive breastfeeding for the first 6 months of life; and continued

breastfeeding throughout the first 2 years, with appropriate complementary food. Although virtually all women in the developing world breastfeed their infants, the majority do not do so optimally. The full benefits of breastfeeding are not realized due to a combination of physical, cultural, and social barriers, such as work outside the home, cultural beliefs about the need for alternative liquids, and inadequate social support for exclusive breastfeeding.

In spite of these barriers, there is evidence that breastfeeding behaviors can improve through a combination of counseling, social promotion, and individual support for managing breast health and related problems. However, there is a poor understanding of which interventions work under what specific conditions or how to replicate successful breastfeeding programs more widely. Additionally, existing approaches still fall short of achieving truly transformational behavioral change because they often fail to shift societal norms or address the range of barriers that women in developing countries face.

To combat these challenges, our strategy seeks to develop and test novel approaches that have the potential to achieve a fundamental shift in breastfeeding behaviors. In collaboration with our Maternal, Newborn & Child Health program, we support integrated delivery of maternal and child health services. Our investments include efforts to:

- test innovative delivery strategies for improving breastfeeding and related complementary feeding behaviors, which include using franchise models, mass and mixed media, and frontline worker support to improve interpersonal interactions with mothers and families
- explore new ways to mobilize social networks and to promote changes in breastfeeding behaviors
- document and disseminate lessons that will enable partners to replicate and scale-up best practices in changing breastfeeding behaviors

Close Knowledge Gaps and Test Interventions to Address Micronutrient Deficiencies

Deficiencies in vitamin A, iron, folic acid, zinc, and iodine can affect brain and cognitive development, reduce physical growth, and contribute to deaths among women and children. Each year, vitamin A deficiency claims the lives of almost 670,000 children under 5 years of age and zinc deficiency claims more than 450,000.¹

Fortification and biofortification, which involve enriching food products by adding micronutrients to them, are a promising way to reach women and children with these needed nutrients. We are currently working through public and private partners to increase coverage of fortified staple

and complementary foods, iodized salt, micronutrient powders, and biofortified staple crops. This work has enabled 400 million people to have access to micronutrient-fortified staple foods.⁷ Working in conjunction with our Agricultural Development program, our partners are developing 10 biofortified crops, staple crops that are enriched with key vitamins and minerals. For example, vitamin A-rich orange-fleshed sweet potato is the first biofortified product to be widely released and commercially available in East and Southern Africa.

One challenge to large-scale fortification and biofortification is that their impact is difficult to measure, as current tools to measure micronutrient status are expensive, invasive, and do not accurately measure the functional status for many nutrients. We are making a number of investments in conjunction with our Discovery program to address challenges to measurement and scale-up so that all infants can be reached with vital micronutrients. Our investments include support to:

- develop and test novel tools to efficiently measure the prevalence of micronutrient deficiencies
- evaluate the impact of existing fortification and biofortification programs on the nutritional status of populations, and particularly on women of childbearing age and young children up to 2 years of age
- demonstrate how to scale-up and replicate commercial fortification and biofortification programs

Gather and Disseminate the Evidence Base on Nutrition for Decision Makers

Although there are several proven interventions to prevent and treat undernutrition, many of the available tools are not being deployed due to policy and resource constraints. Recognizing this problem, the global community is aligning itself around the Scaling Up Nutrition (SUN) movement to raise awareness, resources, capacity, and accountability for action. The SUN movement, supported by over 100 organizations and governments, has outlined a global strategy for reducing undernutrition through the implementation of evidence-based solutions.⁸ As part of the movement, several donors and developing countries have already committed to improving nutrition by investing in health, food and agriculture, water, sanitation, and social protection programs. Private sector partners are also investing in research and development, new products and novel distribution channels, and social enterprises. We are firmly supporting the SUN movement as well as the 1,000 Days partnership, which works to generate awareness and targeted investments to improve nutrition during the critical window of pregnancy to 2 years of age.

The World Bank estimates that \$11 billion is needed annually to scale-up effective nutrition solutions, including \$6 billion for high-quality food to treat moderately and severely malnourished children.⁹ Current donor investments fall far below this amount, though several bilateral donors have increased their commitments recently.^{10,11} There is not only a need for more political will and funding in nutrition to close this gap, but also for new ways to drive down the costs of existing tools and guidance on how to ensure that existing resources are channeled toward the most effective nutrition interventions.

We are supporting a number of efforts to stimulate decision makers to not only spend more but spend more wisely on nutrition. These include investments to:

- gather and disseminate solid evidence of the causes and consequences of undernutrition and what works in nutrition to guide investments, policies, and programming
- advocate for the adoption and implementation of pro-nutrition regulations and policies
- mobilize and provide tools to public and private stakeholders to invest in nutrition and achieve better value for their investments

CHALLENGES

Undernutrition is largely an “invisible” problem because most of the people affected by it do not show the physical or clinical symptoms usually associated with extreme hunger and malnutrition. As policy makers do not readily see this “hidden hunger,” national programs are often weak and underfunded. Even as scientific evidence concerning the importance of nutrition has mounted in recent years, greater commitments are required to achieve our vision of all children having the nutrition they need for a healthy start to life.

Positive nutrition outcomes require actions in multiple sectors, which can be complex and difficult to coordinate. This challenge has been recently exacerbated by the global financial crises that have led to rising food prices and climactic events such as famine in the Horn of Africa, making the need for coordinated and effective response more urgent. We are hopeful that global efforts underway, such as the SUN movement, will help improve collaboration across multiple sectors to improve nutrition and align investments around interventions targeting the critical window of opportunity from pregnancy to 2 years of age.

Nutrition interventions often aim to change behavior or promote the adoption of new products and technologies by patients or consumers. These changes in behavior are influenced by many factors that are difficult to anticipate or address. We hope that our investments and the work of our partners will begin to uncover innovative strategies for catalyzing and sustaining behavior change.

Improving nutrition at scale requires the active and sustained engagement of the private sector. Understanding where business and social goals converge can help unlock both financial and non-financial resources from the private sector to address the challenge of undernutrition. Bringing the government, civil society, and private sectors together to tackle problems of undernutrition will require patience and trust, but we are seeking new pathways for constructive engagement and problem solving.

Finally, funding from many sources is critical to achieving our vision. With a large shortfall in current funding to address the problem of undernutrition, we all must commit to coordinated advocacy and strong leadership to align development partners, implementing agencies, academicians, civil society, the private sector, and national governments to fill the gap and make our vision a reality.

THE WAY FORWARD

Nutrition affects every aspect of human development, beginning in fetal life with brain and other organ formation. It continues after birth, directly influencing immune functions as well as memory, mental processing, and cognitive development. In short, nutrition provides the ingredients for building a healthy start to life and helping individuals realize their full health, learning, and economic potential.

Scale-up of proven nutrition interventions targeted at pregnant women and children up to 2 years of age is urgently needed to reduce significant nutrition-associated death and disability. This will require closing critical knowledge gaps, testing and scaling-up improved and affordable interventions, disseminating evidence to decision makers so that they invest more and more wisely in nutrition, and coordinating global policy and advocacy efforts so that the needed resources and participation of all relevant stakeholders can be ensured to respond fully to the scale of undernutrition. We look forward to working with all of our partners to realize these actions so that all children have the nutrition they need for a healthy start to life.

TO LEARN MORE

Bill & Melinda Gates Foundation

Nutrition Program:

www.gatesfoundation.org/nutrition

Discovery Program:

www.gatesfoundation.org/healthscienceandtechnology

Enteric & Diarrheal Diseases Program:

www.gatesfoundation.org/diarrhea

Maternal, Newborn & Child Health Program:

www.gatesfoundation.org/maternalnewbornandchildhealth/

Agricultural Development Program:

www.gatesfoundation.org/agriculturaldevelopment

Water, Sanitation & Hygiene Program:

www.gatesfoundation.org/watersanitationhygiene

Alive & Thrive: www.aliveandthrive.org

Global Alliance for Improved Nutrition (GAIN):

www.gainhealth.org

HarvestPlus: www.harvestplus.org

Intergrowth 21st: www.intergrowth21.org.uk

International Lipid-Based Nutrient Supplements Study (iLiNS): www.ilins.org

Scaling Up Nutrition (SUN): www.scalingupnutrition.org

1,000 Days partnership: www.thousanddays.org

UNICEF: www.unicef.org/nutrition

WHO: www.who.int/nutrition/en

REFERENCES

- ¹ Black, R. E., L. H. Allen, Z. A. Bhutta, L. E. Caulfield, M. de Onis, M. Ezzati, C. Mathers, and J. Rivera. 2008. Maternal and child undernutrition: Global and regional exposures and health consequences. *Lancet* 371(9608):243–60.
- ² Cesar, G.V., L. Adair, C. Fall, P.C. Hallal, R. Martorell, L. Richter, H. Singh Sachdev. 2008. Maternal and child undernutrition: consequences for adult health and human capital. *Lancet* 317(9609): 340-357.
- ³ Bhutta, Z. A., T. Ahmed, R. E. Black, S. Cousens, K. Dewey, E. Giugliani, B. A. Haider, B. Kirkwood, S. S. Morris, H. P. Sachdev, and M. Shekar. 2008. What works? Interventions for maternal and child undernutrition and survival. *Lancet* 371(9610):417–40.
- ⁴ Micronutrient Initiative. 2009. Vitamin A. <http://www.micronutrient.org/english/view.asp?x=577>.
- ⁵ UNICEF. 2011. State of the world's children. New York: UNICEF.
- ⁶ World Health Organization. 2006. Child growth standards. Geneva: WHO. <http://www.who.int/childgrowth/en/>.
- ⁷ GAIN. 2009. GAIN project results. <http://www.gainhealth.org/performance/project-results>.
- ⁸ Scaling up Nutrition (SUN). 2010. A roadmap for scaling up nutrition. New York: UN. http://un-foodsecurity.org/sites/default/files/SUNRoad-Map_English.pdf
- ⁹ Horton, S., M. Shekar, C. McDonald, A. Mahal, J.K. Brooks. 2010. Scaling up nutrition: What will it cost? Washington, DC: World Bank.
- ¹⁰ Médecins Sans Frontières (MSF). 2009. Malnutrition: How much is being spent: An analysis of nutrition funding flows 2004-2007. Geneva: MSF.
- ¹¹ CCS Co., LLC and the London School of Hygiene & Tropical Medicine. 2011. Scaling up nutrition: Building a global advocacy agenda. <http://thousanddays.org/wp-content/uploads/2011/08/Nutrition-advocacy-joint-summary-report-Final-1.pdf>.

Guided by the belief that every life has equal value, the Bill & Melinda Gates Foundation works to help all people lead healthy, productive lives. In developing countries, it focuses on improving people's health and giving them the chance to lift themselves out of hunger and extreme poverty. In the United States, it seeks to ensure that all people—especially those with the fewest resources—have access to the opportunities they need to succeed in school and life. Based in Seattle, Washington, the foundation is led by CEO Jeff Raikes and Co-chair William H. Gates Sr., under the direction of Bill and Melinda Gates and Warren Buffett.

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